

WHAT IS CLAIMED IS:

1. A multi-layer printed circuit board comprising:
a resin substrate including a plurality of laminated thermoplastic resin films;
a thin film resistor embedded in the resin substrate; and
an electrode disposed on the thin film resistor,
wherein the thermoplastic resin film includes a conductive pattern made of metallic film, and
wherein the conductive pattern disposed over or under the electrode covers a periphery of the electrode.

2. The multi-layer printed circuit board according to claim 1,
wherein the thin film resistor is covered with the conductive pattern disposed over or under the resistor.

3. The multi-layer printed circuit board according to claim 1,
wherein the thin film resistor is covered with the conductive pattern disposed on a side opposite to the electrode across the thin film resistor.

4. The multi-layer printed circuit board according to claim 1,
wherein the thin film resistor has a thickness equal to or thinner than $10\mu\text{m}$.

5. The multi-layer printed circuit board according to claim 4,

wherein the thin film resistor has the thickness equal to or thinner than $1\mu\text{m}$.

6. The multi-layer printed circuit board according to claim 1,

wherein the resin substrate includes a plurality of thermoplastic resin films laminated and bonded together.

7. The multi-layer printed circuit board according to claim 1,

wherein the conductive pattern prevents a fluidized thermoplastic resin from moving toward the thin film resistor when a thermoplastic resin composing the thermoplastic resin film is fluidized.

8. A multi-layer printed circuit board comprising:
a resin substrate including a plurality of laminated thermoplastic resin films; and

a thin film resistor embedded in the resin substrate,
wherein the thermoplastic resin film includes a conductive pattern, which is disposed on a surface of the resin film and made of metallic film,

wherein the resin substrate includes a hole filled with a conductive material, and

wherein the thin film resistor is directly connected to the

conductive pattern disposed over or under the resistor through the conductive material in the hole.

9. The multi-layer printed circuit board according to claim 8,

wherein the thin film resistor is covered with the conductive pattern disposed over or under the resistor.

10. The multi-layer printed circuit board according to claim 8,

wherein the thin film resistor has a thickness equal to or thinner than $10\mu\text{m}$.

11. The multi-layer printed circuit board according to claim 10,

wherein the thin film resistor has the thickness equal to or thinner than $1\mu\text{m}$.

12. The multi-layer printed circuit board according to claim 8,

wherein the resin substrate includes a plurality of thermoplastic resin films laminated and bonded together.

13. The multi-layer printed circuit board according to claim 8,

wherein the conductive pattern prevents a fluidized thermoplastic resin from moving toward the thin film resistor when

a thermoplastic resin composing the thermoplastic resin film is fluidized.

14. A method for manufacturing a multi-layer printed circuit board, the method comprising the steps of:

preparing a conductive pattern film by forming a predetermined conductive pattern made of metallic film on a thermoplastic resin film;

preparing a thin film resistor film with an electrode by forming a thin film resistor on the thermoplastic resin film and by forming the electrode on the thin film resistor;

laminating the conductive pattern film on the thin film resistor film with the electrode in order to cover a periphery of the electrode with the conductive pattern disposed over or under the electrode; and

bonding the conductive pattern film and the thin film resistor film with the electrode by heating and pressurizing the laminates of the conductive pattern film and the thin film resistor film with the electrode.

15. The method according to claim 14,

wherein the thin film resistor is covered with the conductive pattern disposed on a side opposite to the electrode across the thin film resistor.

16. The method according to claim 14,

wherein the thin film resistor has a thickness equal to or

thinner than $10\mu\text{m}$.

17. The method according to claim 14,
wherein the conductive pattern prevents a fluidized thermoplastic resin from moving toward the thin film resistor when a thermoplastic resin composing the thermoplastic resin film is fluidized in the step of bonding the conductive pattern film and the thin film resistor film with the electrode.

18. A method for manufacturing a multi-layer printed circuit board, the method comprising the steps of:

preparing a conductive pattern film by forming a predetermined conductive pattern made of metallic film on a thermoplastic resin film;

filling a hole having a bottom with a conductive material, the hole being formed in the conductive pattern film to have the bottom of the conductive pattern;

preparing a thin film resistor film by forming a thin film resistor on the thermoplastic resin film;

laminating the conductive pattern film on the thin film resistor film in order to connect directly the thin film resistor to the conductive pattern with the conductive material filled in the hole with the bottom, which is provided by the conductive pattern disposed over or under the thin film resistor; and

bonding the conductive pattern film and the thin film resistor film by heating and pressurizing the laminates of the conductive pattern film and the thin film resistor film.

19. The method according to claim 18,
wherein the thin film resistor is covered with the conductive pattern disposed over or under the resistor.

20. The method according to claim 18,
wherein the thin film resistor has a thickness equal to or thinner than $10\mu\text{m}$.

21. The method according to claim 18,
wherein the conductive pattern prevents a fluidized thermoplastic resin from moving toward the thin film resistor when a thermoplastic resin composing the thermoplastic resin film is fluidized in the step of bonding the conductive pattern film and the thin film resistor film with the electrode.